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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,138	04/30/2001	Howard E. Hilton	10992825-1	7892

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AGILENT TECHNOLOGIES, INC.
Legal Department, 51U-PD
Intellectual Property Administration
P.O. Box 58043
Santa Clara, CA 95052-8043

EXAMINER

PERILLA, JASON M

ART UNIT	PAPER NUMBER
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2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/846,138	Applicant(s) HILTON ET AL.	
	Examiner JASON M. PERILLA	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-3, and 5-12 are pending in the instant application.

Response to Amendment/Argument

2. The Applicant's arguments, filed December 22, 2004, have been fully considered.

The Applicant suggests that the prior art reference Iwamatsu (US 6175591) does not disclose every claimed feature of claim 6. Specifically, the Applicant suggests that Iwamatsu does not disclose the claimed "summing means". However, the claimed "summing means" is disclosed by Iwamatsu. As indicated in the rejection applied below, in figure 4 of Iwamatsu, the summing means is not explicitly labeled with a reference numeral although *it is* illustrated. To aide the Applicant in locating the unreferenced "summing means" in Iwamatsu's figure 4, reference is made to figure 20 where references 25c and 25d indicate analogous summing means which can be identified at the same circuit locations in figure 4.

In view of the Applicant's amendments to the claims, new prior art rejections are set forth below.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 2, 3, and 5 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 1, the claim is rejected because the specification does not enable one skilled in the art to utilize the claimed “combination of” (1) the frequency analysis, (2) the complementary characteristic, and (3) the correction characteristic to correct impairments.

Regarding claims 2, 3, and 5, the claims are rejected as being based upon a rejected parent claim.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 6-11 are rejected under 35 U.S.C. § 102(e) as being anticipated by Iwamatsu (US 6175591 – previously cited).

Regarding claim 6, Iwamatsu discloses by figure 4 a generalized digital filter for filtering two-component signal information (Ich and Qch), comprising: a) a dual input port (“Ich INPUT” and “Qch INPUT”), having an I input for a signal x_I and a Q input for a signal x_Q , wherein x_I and x_Q are components of a two-component input signal x (figure 2, “IF-IN”) ; b) a dual output port, having an I output for a signal y_I (fig. 4, “Ich OUTPUT”) and a Q output for a signal y_Q (fig. 4, “Qch OUTPUT”), wherein y_I and y_Q are components of a two-component output signal y ; c) a first signal path (25a-1),

characterized by a first impulse response (FIR filter 25a-1), having an input coupled to the I input port and a first output; d) a second signal path (25b-1), characterized by a second impulse response (FIR filter 25b-1), having an input coupled to the Q input port and a second output; e) a third signal path (25a-2), characterized by a third impulse response (FIR filter 25a-2), having an input coupled to the I input port and a third output; f) a fourth signal path (25b-2), characterized by a fourth impulse response (FIR filter 25b-2), having an input coupled to the Q input port and a fourth output; g) summing means (not labeled) for adding said first and second outputs and for coupling the sum thereof to said I output; h) summing means (not labeled) for adding said third and fourth outputs and for coupling the sum thereof to said Q output.

Regarding claim 7, Iwamatsu discloses the limitations of claim 6 as applied above. Further, according to figure 4 of Iwamatsu, the four impulse responses are independent of one another because they are embodied as four separate FIR filters.

Regarding claim 8, Iwamatsu discloses the limitations of claim 6 as applied above. Further, Iwamatsu discloses that all four impulse responses are characterized to have finite lengths because they are each embodied as a (FIR) finite impulse response filter (col. 2, lines 14-16).

Regarding claim 9, Iwamatsu discloses the limitations of claim 8 as applied above. Further, Iwamatsu discloses that all four impulse responses are each constrained to have equal lengths of N taps (col. 2, lines 14-16).

Regarding claim 10, Iwamatsu discloses the limitations of claim 6 as applied above. Further, Iwamatsu discloses that the four paths are realized by finite impulse response filters as applied to claim 8 above.

Regarding claim 11, Iwamatsu discloses the limitations of claim 10 as applied above. Further, Iwamatsu discloses that each of the finite impulse response filters are independently characterized because each of the filters is independent according to figure 4.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Iwamatsu in view of Seike et al (U.S. Pat. No. 6112067; "Seike").

Regarding claim 1, Iwamatsu discloses in an information transmission system (fig. 2) comprising a plurality of elements for generating (a common transmission/reception system; abstract), transporting (col. 2, line 7, "transmission path"), and receiving (i.e. fig. 2, ref. 22) information, wherein some elements are defective and impose impairments (i.e. col. 2, line 7, "distortion") on the information passing therethrough, a method for correcting said impairments, comprising: b) determining a correction characteristic (i.e. determined coefficients of FIR filters "decided so as to compensate for transmission path distortion"; col. 2, lines 15-20)

corresponding to each defective elements in transmission to "eliminate transmission path distortions" (col. 2, lines 5-8), such that the correction characteristic, when applied to information passing through said element, corrects (i.e. "eliminating transmission path distortion"; col. 2, line 7) the impairment imposed by said element; c) creating a composite, two channel I and Q finite impulse response filter (i.e. "FIR filter"; col. 2, lines 1-30; fig. 4) having I-I (fig. 4, ref. 25a-1) and Q-Q (fig. 4, ref. 25b-1) direct components and I-Q (fig. 4, ref. 25a-2) and Q-I (fig. 25b-2) cross components; and g) positioning (see position of transversal filter of figure 4 in figure 2 as ref. 25) said filter in said information transmission system (fig. 2) for correcting said impairments imposed on the information by said defective elements. Iwamatsu does not explicitly disclose (1) identifying defective elements and characterizing the defect of each, including performing a frequency analysis of each element; (2) creating a frequency characteristic complementary to said frequency analysis and performing (3) an inverse discrete Fourier transform of said complementary characteristic. However, the use of frequency analysis for the generation of filtering correction characteristics is well known in the art as evidenced by Sieke. Sieke teaches, in an analogous defect correction characteristic generator (abstract; col. 1, lines 20-25), (1) identifying defective elements and characterizing the defect of each (fig. 11, "FREQUENCY CHARACTERISTIC GENERATION PORTION"), including performing a frequency analysis of each element; (2) creating a frequency characteristic complementary to said frequency analysis (fig. 11, "CORRECTION VALUE GENERATION PORTION") and (3) performing an inverse discrete Fourier transform (FIG. 11, "INVERSE FOURIER TRANSFORM PORTION") of

said complementary characteristic (col. 16, lines 27-31). Sieke teaches that the use of the frequency analysis provides "simple and easy system modification to cope with a plurality of types of digital communication systems" (col. 3, lines 65-68). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the correction characteristic of the filter of Iwamatsu could be generated according to the robust, accurate, and simple frequency analysis of Sieke because it would lead to the generation of a more accurate corrective filter response.

Regarding claim 5, Iwamatsu in view of Sieke disclose the limitations of claim 1 as applied above. Further, Iwamatsu discloses by figure 4 that step (c) further includes arranging said direct and said cross components as terms of a set of 2x2 matrices; and step (d) further includes arranging said single correction characteristic as terms of a set of 2x2 matrices. The limitations of claim 5 are disclosed by figure 4 because of application of filters 25a-1, 25a-2, 25b-1, and 25-b2 to the Ich and Qch channels by the cross product and addition of the circuit design.

8. Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Iwamatsu in view of Sieke and Abe (US 5857004).

Regarding claim 2, Iwamatsu in view of Sieke disclose the limitations of claim 1 as applied above. Iwamatsu in view of Sieke disclose a method in an information transmission system (Iwamatsu; fig. 2) wherein the system includes a two-channel down converter (fig. 2, refs. 22e and 22f; col. 1, lines 55-67), and I and Q data processing channels (fig. 2, "Ich" and "Qch"). Iwamatsu discloses that the systems takes an intermediate frequency (IF) signal as input (col. 1, lines 37-40) but does not

expressly disclose the system including the elements of an IF filter. However, Abe teaches by figure 1 an analogous receiver which creates an IF signal for processing by I and Q data processing channels. The system utilizes an IF band pass filter (BPF; fig. 1, ref. 23; col. 1, lines 48-50) for filtering out of band frequencies which are unwanted by the system. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize an IF BPF as taught by Abe with the IF information transmission system of Iwamatsu in view of Sieke because it could be advantageously used to filter unwanted out of band frequency noise from the signal being received.

Regarding claim 3, Iwamatsu in view of Sieke disclose the limitations of claim 1 as applied above. Further, Iwamatsu in view of Sieke and Abe disclose the further limitations of claim 3 including I and Q data channels (Abe; fig. 2, "Ich" and "Qch"), a two channel up-converting modulator (fig. 2, refs. 22e and 22f; col. 1, lines 55-67), and an IF filter (Abe; fig. 1, ref. 23; col. 1, lines 48-50) as applied to claim 2 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON M. PERILLA whose telephone number is (571)272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jason M Perilla/
Primary Examiner, Art Unit 2611

/jmp/